

WHAT IS CLAIMED IS:

1. A method of remediating selected media contaminated with halogenated hydrocarbons comprising:

contacting iron powder containing about 0.03 to about 2% by mass of sulfur, based on the mass of the iron powder, with the halogenated hydrocarbons contained in the media; and

causing dehalogenation of halogenated hydrocarbons.

2. The method according to Claim 1, wherein the iron powder contains about 0.1% by mass or less of manganese, based on the mass of the iron powder.

3. The method according to Claim 1, wherein precipitates of sulfur are formed on at least portions of the surfaces of the iron powder.

4. The method according to Claim 3, wherein precipitates of sulfur are Fe-S based compounds.

5. The method according to Claim 1, wherein said media is selected from the group consisting of soil, water and gases.

6. The method according to Claim 1, wherein about 0.1 to about 10% by mass of the iron powder is contacted with the media containing the halogenated hydrocarbons, based on the mass of the

media.

7. The method according to Claim 1, wherein the halogenated hydrocarbons are elected from the group consisting of trichloroethylene, tetrachloroethylene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,1-dichloroethylene, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethane, dichloromethane, carbon tetrachloride, methyl chloride, chloroform, methyl chloroform, 1,1,2,2-tetrachloroethane, 1,2-dichloropropane, 1,3-dichloropropane, methyl bromide, 2-bromopropane, 1,3-dibromopropane, 1,4-dibromopropane, allyl bromide, PCB and dioxin.

8. The method according to Claim 1, wherein contacting the iron powder with the media is achieved by spraying on, mixing with or injecting into the media.

9. The method according to Claim 1, wherein surfaces of the iron powder are wet with at least one or more layers of water molecule layers.

10. An iron powder capable of dehalogeneting halogenated hydrocarbons contained within a selected media, the iron powder containing about 0.03 to about 2% by mass of sulfur, based on the mass of the iron powder.

11. The iron powder according to Claim 10, further containing about 0.1% by mass or less of manganese, based on the mass of the iron powder.

12. The iron powder according to Claim 10, wherein precipitates of sulfur are formed on at least portions of the surfaces of the iron powder.